

REMARKS/ARGUMENTS

In the Office Action mailed July 14, 2005 the Examiner affirmed the Applicants election of Group 1 invention and requested cancellation of the non-elected claims. The Examiner also examined claims 1-14 and 19-22. Claims 1-8 were rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over West et al. (US 5,459,181 hereinafter “West”). Claims 1-14, 19-22 were rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ainley et al. (SPE 25463: A comparison of Delay Methodology, Production Operations Symposium, Oklahoma City, OK, March 21023, 1993. pp 517-520, hereinafter “Ainley”). The Applicant respectfully traverses these rejections.

While preparing this response, it was identified that the copy of Ainley previously provided may have had an inadvertently missing page. Submitted herewith is a form 1449 with a complete copy of the Ainley reference.

Amendments to the Claims

The Applicant herein cancels withdrawn claims 15-18 as requested by the Examiner.

The Applicant further amends claims 1 and 9 to distinguish the claimed invention from the Examiner’s interpretation of what inherently occurs if one were to practice West. Applicant herein amends claim 1 to include the limitation of claim 8 and cancels claim 8. Applicant also herein amends claim 9 to include the limitation of claim 14 and cancels claim 14.

History of Development of the Claimed Invention

The claimed process is an improvement of the process of West. The Applicant agrees that West discloses that dry composition that can be mixed with water and applied to a surface to create a crosslinked polymer. However, inherent in the practice of the process and composition taught by West is a viscosity to concentration ratio upon full dissolution of the polymer. To achieve a specific concentration of polymer in the aqueous mixture, practicing West places a practical minimum limit on the viscosity of the aqueous mixture after dissolution. When practicing West in the field, the Applicant determined that to achieve an effective concentration

of polymer in the aqueous mixture (i.e., effective to create a substantially water insoluble crosslinked polymer with sufficient strength to last in the environment long enough for germination to take place), the viscosity of the mixture was too high to apply using standard hydroseeding equipment (see discussion of drawbacks of prior art on page 3 of the application). In fact, it was often the case that the Applicant had to shovel out the hydroseeder after the West composition polymerized to a viscosity so high that the hydroseeder was unable to apply it at all. West's response to this problem is provided on col. 5, lines 19-21 where West says to adjust the concentration via using "a suitable amount of water to permit the dissolved compounds to be used in existing spray systems." This application is the result of experimentation to improve on West and make it practically usable in the field.

Declaration Traversing Rejection under 37 CFR 1.132

Applicant has prepared a Declaration under 37 CFR 1.1.32 attesting to the differences between measurement of viscosity using a Brookfield RVT viscometer at 20 rpm and a Baroid rheometer at 100 rpm. These tests were performed in 1984 as part of an attempt to correlate rheometer viscosity data in the literature to RVT viscometer data. Applicant attests that there is no correlation between the results obtained using the two measurement techniques as they measure viscosity in substantially different ways. Applicant further attests that viscosity data from a Brookfield RVT is nearly always higher than that reported by a rheometer.

In the Declaration, Applicant further provides test data comparing practicing West in the lab using commercially available guar gums at different concentrations and the Applicant's claimed invention with depolymerized guar gum sold under the trademark GUARDIAN. The tests show a very substantial change in viscosity between the two products when completely dissolved (measurement 15 minutes after mixing), however, both products when applied formed suitable polymeric films upon drying.

Claim Rejection of Claims 1-8 Over West

Claims 1-8 were rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over West et al. (US 5,459,181). In the rejection, the Examiner stated that "because West et al. disclose a composition that is substantially identical to

the composition as claimed when the water is removed, the examiner has a reasonable basis to believe that the claimed ‘viscosity less than about 500 centipoise’ at the claimed concentration is inherently possessed in the composition of West et al.” Furthermore, the Examiner stated “since the PTO does not have proper means to conduct experiments, the burden of proof is now shifted to applications to show otherwise.”

To anticipate a claim, a reference must teach or disclose each and every element in the claim. “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” Verdegaal Bros., Inc. v. Union Oil Co., 814 F.2d 628, 631 (Fed. Cir. 1987).

West does not disclose or inherently disclose depolymerized polymer

Applicants have amended claim 1 to include the depolymerized polymer limitation in claim 8. Applicant respectfully points out that neither West nor Ainley disclose using depolymerized polymer.

Furthermore, to anticipate based on inherency, a prior art reference “must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.” In re Robertson, 169 F.3d 743, 745 (Fed. Cir. 1999). Applicant submits that depolymerized polymer is not necessarily present in West and, in fact, West intended use only of unmodified natural polymers such as guar gum.

West teaches away from applying a low viscosity polymer solution

West does, however, teach away from low viscosity mixtures when West teaches forming a “thick slurry” prior to application of his aqueous mixture. (See West, col. 5, lines 25-27 “After mixing for about 15 minutes a thick slurry of suspended fibers and seeds is formed while the three-part blend of binder, covalent crosslinking agent, and catalyst is dissolved along with the fertilizer, if added.”). West also teaches away from using low viscosity mixtures when West states that low viscosity mixtures “readily drain through the mulch fiber and are lost to the soil leaving the mulch relatively unbonded after drying.” West, col. 2, lines 50-52. Furthermore, it is clear that West would consider a low viscosity as indicative of either a) an incomplete

solubilization of the polymer or b) a very low concentration of polymer. Either situation would result in an ineffective polymer film "leaving the mulch relatively unbonded after drying."

Applicant's mixture, on the other hand, has a low viscosity but a relatively high concentration of dissolved polymer. That is not achievable by the technology disclosed by West.

Claim Rejection of Claims 1-14 Over Ainley

Claims 1-14, 19-22 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ainley et al. (SPE 25463: A comparison of Delay Methodology, Production Operations Symposium, Oklahoma City, OK, March 21023, 1993. pp 517-520). Applicant respectfully traverses this rejection.

After reviewing Ainley regarding borate crosslinked guar systems, the following comments may help to clarify that information and show that Ainley is non-analogous to the present situation.

- 1) This paper references both guar gum and hydroxypropyl guar gum, however it does not specify which was used for the data figures.
- 2) The data Figure 1 indicates a borate crosslinked guar at 50-lb/Mgal, or 0.6% polymer concentration.
- 3) The viscosity data is indicated without units and at a shear rate of 40 sec-1 and only for temperatures above 165 F. This would indicate the use of a rheometer (because shear rate is a variable that has to be set with the rheometer but which is not a variable in an RVT viscometer), probably a Fann 50 that is capable of controlling solution temperature while measuring viscosity.
- 4) Viscosity indications for guar gum and other related carbohydrate solutions are entirely dependent upon the shear rate and the shear configuration. These solutions are non-Newtonian and as such demonstrate different viscosity depending on the shear treatment.
- 5) There is no correlation between viscosity indications from the Brookfield RVT instrument that uses a thin rotating disc and the rheometer that uses a rotating cylinder around a cylindrical pickup device. The attached data in the Declaration from 1984 demonstrates that

a single solution changes such that the ratio between the measured viscosity using Brookfield and rheometer also changes significantly.

- 6) The indicated use of glyoxal is to complex the borate ion until the temperature of the solution is elevated much above ambient. The complexing is done to protect the polymer from syneresis at ambient temperature that would result in dewatering of the polymer.

Therefore the Ainley data demonstrates a much different phenomena. It is the change in viscosity at extremely high temperatures, 165 to 200 F, compared to the normal ambient use of hydroseeding applications. The instrument used for measurement is measuring a different viscosity phenomena. The use of glyoxal is to control the availability of borate ion in the solution, rather than making a final dried film substantially insoluble when exposed to the environment.

Ainley does not disclose or inherently disclose depolymerized polymer

To anticipate a claim, a reference must teach or disclose each and every element in the claim. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros., Inc. v. Union Oil Co., 814 F.2d 628, 631 (Fed. Cir. 1987).

Applicants have amended claims 1 and 9 to include the depolymerized polymer limitation in claims 8 and 14 respectively. Applicant respectfully points out that neither West nor Ainley disclose using depolymerized polymer.

Furthermore, to anticipate based on inherency, a prior art reference "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." In re Robertson, 169 F.3d 743, 745 (Fed. Cir. 1999). Applicant submits that depolymerized polymer is not necessarily present in Ainley and, in fact, Ainley intended use only of natural polymers such as guar gum.

Ainley does not disclose a viscosity at ambient temperatures

Applicants have amended claims 1 and 9 to more precisely point out that the mixture is to be applied under ambient conditions normally found in the field. Applicant respectfully points

out that Ainley only discloses actual viscosity (assumed to be in centipoise) at temperatures between 165 and 200 F. Furthermore, Ainley's data in FIG. 2 implies that the viscosity of a polymer solution below 165 F would be well above the claimed 500 cps, regardless of the difference between the measurement techniques.

Ainley does not meet the inherency requirement

To anticipate based on inherency, a prior art reference "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999) states (emphasis added):

If the prior art reference does not expressly set forth a particular element of the claim, that reference still may anticipate if that element is "inherent" in its disclosure. To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is **necessarily present** in the thing described in the reference, and that **it would be so recognized by persons of ordinary skill.**" *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268, 20 U.S.P.Q.2D (BNA) 1746, 1749 (Fed. Cir. 1991). "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Id.* at 1269, 20 U.S.P.Q.2D (BNA) at 1749 (quoting *In re Oelrich*, 666 F.2d 578, 581, 212 U.S.P.Q. 323, 326 (C.C.P.A. 1981)).

Applicant submits that Ainley is silent on the actual viscosity of an aqueous mixture below 165 F. Applicant also submits that the evidence in Ainley from FIG. 2, if anything, teaches that the viscosity of the mixture at ambient temperatures will be greater than the claimed 500 cps, regardless of the measurement technique.

Claim Rejection of Claims 19-22 Over Ainley

Claims 19-22 were rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ainley et al. (SPE 25463: A comparison of Delay Methodology, Production Operations Symposium, Oklahoma City, OK, March 21023, 1993. pp 517-520). Applicant respectfully traverses this rejection.

Ainley does not disclose every element

To anticipate a claim, a reference must teach or disclose each and every element in the claim. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631 (Fed. Cir. 1987).

The composition of claim 19 contains several elements including a limitation on the ratio of glyoxal to the heavy metal based crosslinking agent. Applicant described the beneficial effects of this ratio in the application on page 7 as being particularly effective in creating an easily applied (i.e. low viscosity) aqueous mixture that results in a particularly long lived polymer coating.

Ainley contains no discussion of the amount of glyoxal or of borate used in Ainley's experiments. Therefore, Ainley does not anticipate this limitation.

Ainley does inherently disclose the missing requirement

To anticipate based on inherency, a prior art reference "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999) states (emphasis added):

If the prior art reference does not expressly set forth a particular element of the claim, that reference still may anticipate if that element is "inherent" in its disclosure. To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is **necessarily present** in the thing described in the reference, and that **it would be so recognized by persons of ordinary skill**." *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268, 20 U.S.P.Q.2D (BNA) 1746, 1749 (Fed. Cir. 1991). "Inherency, however, may not be established by probabilities or possibilities. The **mere fact that a certain thing may result from a given set of circumstances is not sufficient**." *Id.* at 1269, 20 U.S.P.Q.2D (BNA) at 1749 (quoting *In re Oelrich*, 666 F.2d 578, 581, 212 U.S.P.Q. 323, 326 (C.C.P.A. 1981)).

Applicant submits that Ainley contains no information about the amount of borate or glyoxal used. Applicant also submits that the "mere fact that a certain thing [in this case, an aqueous mixture having a specified range of glyoxal:heavy metal crosslinker ratio] may result from a given set of circumstances [disclosing using an unknown amount of glyoxal to complex an unknown amount of borate between 165-200 F] is not sufficient."

CONCLUSION

Claims 1-7, 9-13 and 19-22 are pending in this application. Applicant believes all claims are now in a condition for allowance. Therefore, Applicant respectfully requests a notice of allowance.

Applicant believes no fees are believed due for the submission of this Amendment. However, if this is not the case, please charge any such required fees to Deposit Account No. 502775 with reference to attorney docket number 76721.011600.

Respectfully submitted,

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Date



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